Nature-based managed aquifer recharge concept of the Tóth József and Erzsébet Hydrogeology Group of ELTE is currently registered as a European trademark.

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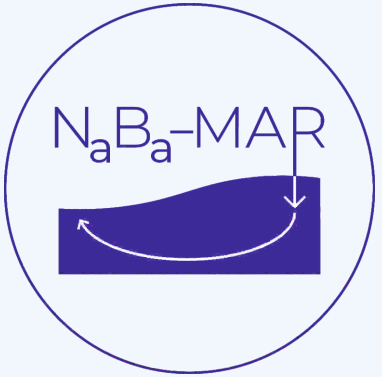
Nature-Based Managed Aquifer Recharge

How can groundwater contribute to climate change adaptation?

Search for solutions
with the NaBa-MAR trademark



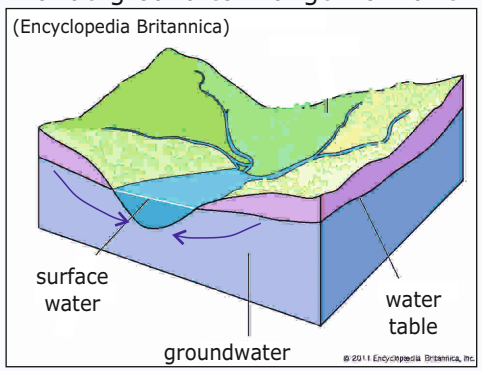
Developed in the frame of

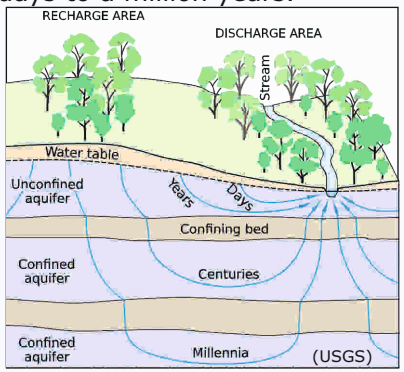
Green & blue infrastructure solutions are efficient tools to compensate artificial anomalies in the water cycle. Several of these urban water retention systems are specifically designed to increase infiltration and enhance groundwater recharge.

? However, the question is rarely asked: what happens to water under the surface? And how can groundwater processes contribute to climate change adaptation and urban water resilience?

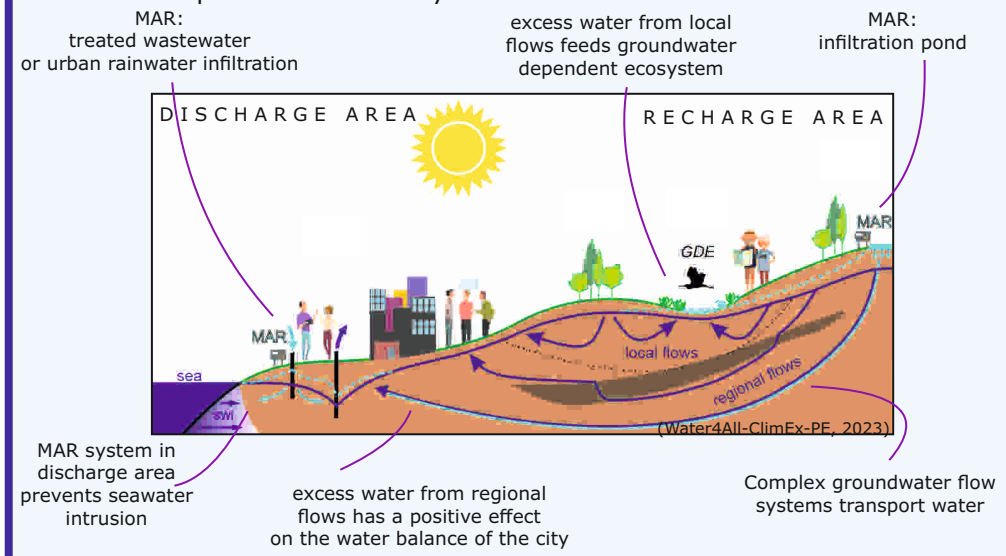
To understand the processes beneath the surface, we need to consider groundwater as physically-based system. This approach has three main characteristics:

- Groundwater table, below which the pores of the rocks are saturated with water, is a continuous interface that mostly follows the geographical topography.
- Groundwater and surface water are part of the water cycle and constantly interact with each other. Nor are there natural aquicludes fully separating different groundwater units.
- Groundwater moves controlled by differences in water level. This slow flow occurs in complex systems. The time that water spends underground can range from a few days to a million years.





Nature-Based Managed Aquifer Recharge is an innovative water retention solution based on modern hydrogeological approach that is ecologically and socially more efficient in climate change adaptation by enhancing physically-based natural processes. Traditional *managed aquifer recharge* (MAR) describes intentional storage of water in aquifers on local scale for later extraction or ecological benefit. The purpose of the N_aB_a-MAR invention is to extend current MAR solutions to landscape or regional scale and to nature-based processes through a detailed understanding of groundwater movement as part of the water cycle.



In addition to stop groundwater level decline, the objectives of this technology include i) nature-based management of hydrological extremes and water scarcity ii) ensuring sustainable recharge of aquifers, thereby preserving the quality of aquifers used to supply drinking water as well as iii) protecting groundwater dependent ecosystems. These subsurface processes can also be linked to urban water management, iv) emphasising the role of groundwater in blue infrastructure solutions.